

**“Direct from Space: Information Affluence for the Developing World”  
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I am honored to be here at the Goddard Space Flight Center and have the opportunity to be among men and women who are truly reaching for the stars.

Of course, you are not the only ones whose eyes are focused on heavenly destinations. There are countless people who have wished to travel into space. Now that Dennis Tito has made his historic journey as the first paying space tourist, many others will want to follow his example.

The question is, who's next? A reporter from UPI has raised the intriguing possibility that a future space tourist might be Larry Harmon, the entrepreneur who made his fortune by marketing Bozo the Clown. Mr. Harmon did weightlessness training with the Apollo astronauts and, according to the UPI reporter he has already declared his desire to go into space.

Maybe NASA will devise a special space suit to accommodate the entrepreneur or even Bozo the Clown.

I understand NASA may have good reasons for not being overjoyed about the recent excursion of Dennis Tito. But regardless of your feelings about Mr. Tito's space flight, I believe his desire is universal. Space is the final perspective – wherein our planet hangs like a lovely jewel, and everything is in harmony. I have always believed that conflicts are rooted in the lack of perspective. As Bette Midler sang:

*From a distance, the world looks blue and green  
and the snowcapped mountains white.  
From a distance, the ocean meets the stream,  
and the eagle takes to flight.*

*From a distance there is harmony,  
and it echoes through the land.  
It's the voice of hope, it's the voice of peace,  
It's the voice of every man.*

*From a distance we all have enough,  
and no one is in need.  
And there are no guns, no bombs and no disease,  
no hungry mouths to feed.*

Like Dennis Tito, all of us have wanted to venture to an exotic, faraway place, especially when we have the assurance of returning to the comfortable familiarity of home.

Over the next few minutes, let me take you on a journey to a place that is of this world, but far, far from our world. This trip, unlike Mr. Tito's, will not let you see this world from a distance – but much closer. I assure you we will return to familiar surroundings shortly.

In preparation for this trip, please leave your cell phones behind. Your handsets won't do you any good. Where we're going, they don't have the infrastructure to support them. In fact, where we're going, there are hundreds and hundreds of millions of individuals who have never made a telephone call.

The lack of telephones makes sense considering that telephones are economic instruments. As we arrive at our destination, you will notice there is not much economic development. The average person here earns less than a dollar a day. Actually, the dearth of telephones is the least of the problem.

The average family lives in a dwelling with no running water or electrical power. Because water supplies are prone to contamination, hundreds of thousands of children die each year of diarrheal diseases. Because resources are not available for the simplest of preventative measures, millions more young lives are lost to malaria, influenza and tuberculosis.

The children whose bodies are not lost to disease have minds that are lost to ignorance. We visit one expanse of land inhabited by 600 million men, women and children, with more than 80 million youngsters out of school. Fewer than two percent of boys and girls there ever attend university.

In this place, AIDS is not an isolated problem. Along one major route, 43 percent of adults are infected with HIV. The AIDS death toll among adults is so great that a generation of orphans is being left in its wake. One landmass – comprising a fraction of the earth's population – holds 12 million AIDS orphans; the rest of the world combined contains only 1 million children left parentless by the disease. More than 5,500 people will die of AIDS here every day, over two million this year.

Love the tour, so far? Well there's more!

Poverty and disease are compounded by chaos. Close to a dozen armed conflicts persist here. They fight for land, for diamonds, for petroleum. Sometimes they fight and kill, simply out of sheer hatred. Battlefield casualties number in the thousands. The deaths of noncombatants are even greater; civilians perishing from the starvation and disease that follow warfare. And we can count refugees by the millions.

Look at this place: poor, sick, violent. It must seem stranger and more incomprehensible to you than the vast reaches of outer space did to Dennis Tito.

You may now settle back in the familiar comfort of this auditorium at the Goddard Space Flight Center. Our journey is over. For now.

As you may have surmised, our brief trip took us to Africa - a place of our world, but very, very foreign from the world in which you and I live.

This is one of the places we, as a company, have chosen to make a difference using the space technology and the orbit spectrum resources of our planet. To be sure, this place generates a GDP in excess of \$670 billion annually. There are more than 100 million radio sets, 60 million television sets and 5.5 million PCs in use there. It is the objective of WorldSpace to build a business in Africa and make a unique contribution there. We believe the dearth of infrastructure creates a great business opportunity whose details we can discuss during the Q&A.

There are other places – in Asia and Latin America – where people struggle with poverty, illness and conflict as they do in Africa. These, too, offer a vast market for the technology and business we have created and a wonderful opportunity to do great good. An old Chinese proverb perfectly expresses our aspirations:

“If you want one year of prosperity,” the saying goes, “grow grain; if you want 10 years of prosperity, grow trees; but if you want 100 years of prosperity, grow people.”

This is precisely what we intend to do. It seems our lives of abundance, security and stability are utterly different from theirs. We are rich in money and technology, and they are so poor in both.

But the source of our wealth does not reside in dollars or devices. Indeed, the basis of our wealth is immaterial. We can't measure it with calipers or weigh it on a scale. The only place we can truly hold it is in our minds.

The basis of our wealth – of **all** our wealth – is information.

This morning I would like to do three things:

- ?? I want to share with you some thoughts about the importance of information.
- ?? I want to tell you what we at WorldSpace Corporation are doing to bring a constant flow of information to people who need it most. And,
- ?? I want to look at how abundant information could transform our world.

Information is, in my humble opinion, the *sine-qua-non* to social and economic development. It is the predicate to everything we know. Information is ubiquitous. It is behind our DNA, the chair we sit on, the building we are in, the Space Shuttle's OMS.

Look behind the wealth of nations and of individuals and you will find information. Information about process, technique and organization.

Look behind the poverty of individuals and nations and you will find ignorance.

People are only as developed as the information they access. Given the wretched conditions that prevail over so much of our earth, it is clear billions of people are deprived of information they need to create decent lives for themselves and their families.

Around the world, 125 million children are not in school . . . 80 million in Africa alone. Eighty million! That's more people than the population of France, a lot more. Over 880 million adults – almost entirely in developing countries – are illiterate.

Ignorance has consequences. Just ask public health authorities in South Asia, where nearly one million children die each year of easily treatable digestive ailments. Take it from the social workers of Africa, who are dealing with 12 million children orphaned by AIDS. Listen to the men and women who help refugees fleeing armed conflict.

Information means life. I realized this in the mid-1980s after reading an article about how AIDS was spreading rapidly through Africa because the continent lacked infrastructure to alert people about the epidemic.

Africans were not just dying of disease. They were dying of ignorance.

I became convinced of the urgent need to create a platform to deliver information to vast areas efficiently, economically and practically. Mind you, I never got into technology for its own sake, but only for the end it could potentially deliver.

Our end is service: making sure people get the information they need to survive and can use to enhance their lives. So we took technology and bent it to serve our vision.

By combining satellites with high-powered amplifiers and ingenious digital coding, we could reach vast expanses, delivering an array of audio and multimedia programs directly via a small, portable receiver.

It was a great idea. But it would never be anything more unless we found a way to realize it. Quickly, it became apparent we had to start a business. This meant raising capital, creating products and services and selling them.

There were a few hurdles for us. As we embarked on this endeavor we had

?? No money,

?? No technology,

?? No partners, and

?? No regulatory authority to operate a service.

But we had a wonderful napkin on which we formulated this idea.

That napkin became a one-page overview, then a two-page summary, which led to a ten-page business plan.

When I started, everyone including my wife thought I'd be crazy to embark on such a journey.

I agreed with them.

So, in 1990, I quit my job, founded WorldSpace and applied to the FCC for a license to operate a satellite to broadcast audio programs to Africa.

In 1991, the FCC issued that license.

In 1992, the ITU set aside a large segment of the choicest frequencies on a worldwide basis for our service.

In 1993, Trinidad granted us a license to serve Latin America.

In 1994, we anchored the basic technology and infrastructure design of our system.

In 1995, Australia issued us a license for the AsiaStar satellite and we obtained funding to build our system.

In 1996, we reached agreements with leading companies to build our receivers.

From 1997 to 2000, we hunkered down, built the infrastructure and launched the business.

Since early 2000, the WorldSpace AfriStar satellite has been broadcasting to all of Africa and the Middle East. Our second satellite, AsiaStar, went into operation in September 2000. Today these satellites are broadcasting to nearly 100,000 receivers in a few selected cities within our coverage area. Each receiver has a listenership of approximately five people. That means a growing audience of over 500,000 people. There are also backlog orders for over 400,000 receivers, which will raise our audience significantly when they are fulfilled.

Through the non-profit WorldSpace Foundation, we have 1400 receivers that are currently reaching 1.5 million people in Africa. Yes, that is right – 1400 receivers are placed in community centers and connected to community radio stations to reach, on average, hundreds of people per receiver.

Later this year, we plan to launch our third satellite, AmeriStar, to cover Central and South America and the Caribbean. When the full constellation of three satellites is up and running, WorldSpace will hold the largest direct broadcast footprint ever operated by a single organization.

Simply stated, these satellites will broadcast 50 plus channels or radio stations directly to a new generation of receivers. Here's an example. No dish is necessary, just a simple antenna on the receiver that's smaller than a paperback book. The receivers can also be connected to a computer to deliver full-blown internet-like multimedia content. Equally important, these receivers are also individually addressable, making it possible for us to offer premium programming for a monthly subscription fee.

The growth of internet-capable PC's in the developing world is outstripping the capacity of the telephone infrastructure. The WorldSpace system can deliver gigabytes of information to computers without the need for a phone, direct via the receiver.

This is important to both generate corporate revenue *and* stimulate positive transformation on a global scale.

When we began service, the WorldSpace satellite receivers sold for between \$250 and \$400. In our market, there are over 200 million households that could afford those receivers, even if the price never came down. But come down, it has. When I last spoke to a NASA audience at the Low Memorial Awards in April 2000, I said we would slash the retail price by a significant factor. We have done just that in under one year. Today, we are producing satellite receivers – like this one – that cost \$50 to make, and we see a road map to building receivers that will ultimately sell for \$20 to \$30. Given all the terrific content that's on the WorldSpace system, we want to access 200 million households that could afford our receivers at the start of service.

We will earn revenue in three ways, by:

?? Leasing channel capacity,

?? Collecting payments for commercial advertising, and

?? Charging fees for specialized offerings, like a multimedia service that aggregates the best the web has to offer and delivers it directly to homes, bypassing bottlenecks in the local loop.

There are nearly 1.5 billion radio receivers in our market today, most able to access only one or two radio stations. These receivers cost anywhere from \$10 to \$100, on average – within the price range of our receivers today. As consumers in our marketplace purchase the 150 million receivers they actually buy every year, we know more and more of these receivers will be WorldSpace enabled.

The WorldSpace opportunity is to ultimately replace the 1.5 billion radio receivers with our satellite enabled receivers. If we do that, each receiver will have a listenership of 3 – 5 people. Coca-Cola says, the average human being has a need to drink five times a day. In our 5+ billion people marketplace, that makes 25+ billion opportunities for people to drink Coke. That is why we believe we are an excellent partner for the likes of a world-class soft drink company to remind our 5-billion people market to drink Coke . . . or is it Pepsi?

This is one of the ways we will make money for this enterprise. I mentioned that our receivers are also individually addressable. We plan to offer premium audio and multimedia services to our marketplace for a small fee of \$5 – \$10 a month. We have done huge amounts of market surveys to confirm that we will have over 60 million people willing and able to subscribe. You add that up on a monthly basis, and it adds up to real money!

However, money has always been more a means for us than an end in itself. Having money enables us to get things done. The rate at which we earn it provides a good indicator of consumer acceptance and operating efficiency.

For WorldSpace, money is a means. Our end – our objective – is service. If we serve audiences well, WorldSpace will earn money, lots of money. That's a given.

If WorldSpace serves audiences well, the result could catalyze outcomes more compelling than money, far more. What do I have in mind? Many things: better health, greater knowledge and more material abundance.

Just imagine we can deliver sufficient knowledge with this system alone to educate the 125 million children who are out of school today. At the end of it all, suppose we taught them nothing and required of them nothing, other than each



of them to plant a fruit tree. There would be 125 million more fruit trees on our planet. Suppose we crystallized a campaign to build major and minor roads that crisscrossed continents like Africa. Just imagine what that would do to commerce, communications and to job creation. A new deal? You bet. We think there is much that we can do by delivering information, by delivering knowledge.

But there is one objective I envision above all others: peace on earth.

To some the very suggestion of achieving peace on earth is outlandish. Their response would be to declare, "that's impossible." On the subject of possibility, I quote an insightful man.

"It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow."

Those words are from the man for whom this space flight center is named, Dr. Robert H. Goddard. I wonder if Dr. Goddard is listening; I wonder if he agrees? His life and work prove the truth of his words. Dr. Goddard took dreams of flight and through his diligent, persistent work made those dreams into hopes. Others standing on his great shoulders – including you in this auditorium – turned those hopes into reality.

And those who, in contradiction to Dr. Goddard's wisdom, were careless about declaring what is impossible look bad in retrospect. A 1921 editorial from the *New York Times* stated, "Professor Goddard does not know the relation between action and reaction and the need to have something better than a vacuum against which to react. He seems to lack the basic knowledge ladled out daily in high schools." As Apollo 11 made its historic journey in July 1969- pushing steadily against the vacuum of space, the *Times* published a long overdue retraction.

"The dream of yesterday is the hope of today and the reality of tomorrow." And no dream has been as persistent in our common past and as elusive at becoming real as *Pacem In Terris* or peace on earth. Dr. Goddard dealt with physics, mysteries waiting to be solved. The struggle for peace forces us to confront what we know only too well, yet continually defies our ability to create solutions.

My friends, if we examine wars past and present, I submit they can be reduced to a handful of causes. Look behind violent conflict and you will find:

?? Tribalism;  
?? The perception of scarcity;  
?? Greed, and  
?? Injustice.

The remedy for each of these involves information.

I do admit that many, maybe all the causes of violence are rooted in deep psycho-historical – and therefore – intractable issues. Possibly based in whole or in part on the fallacy of specialness. Maybe we can recognize that Jews and Arabs, Serbians and Bosnians, Hutus and Tutsis will always hate each other. And you hate the Yankees, and I just hope the Lakers cream the San Antonio Spurs. Maybe this is our lot: we are fundamentally tribal and think in Cartesian paradigms. “I think, therefore I am.” Under this paradigm everything starts from “I” going in a concentric circle of we’s. We: my family; we: my neighborhood, village, country, race, religion – and someday, if we are lucky to look at things from a distance, we: my species. Bette Midler sang:

*From a distance we are instruments,  
marching in a common band.  
Playing songs of hope, playing songs of peace,  
They’re the songs of every man.*

*God is watching us,  
God is watching us,  
God is watching us from a distance.*

*From a distance you look like my friend,  
even though we are at war.  
From a distance I just cannot comprehend,  
what all this fighting is for.*

Yesterday a friend reminded me about another paradigm to the Cartesian paradigm. It comes from the Zulu word “Ubuntu,” which means “I am what I am because of you.” In the Cartesian paradigm, everything is in isolation. In the Ubuntu paradigm, it is about connection.

*From a distance there is harmony,  
and it is echoing through the land.  
And it’s the hope of hopes, it’s the love of loves,  
It’s the heart of every man.*

The root word for harmony, *armonie*, means, “the agreement between body parts,” like two bones joining together. It is impossible to hear a single note, because when you strike that note, its echoes change the note. Harmony is about agreement. Maybe we cannot and should not define harmony or peace as the absence of hatred or ill will, but as an agreement to act civilly despite our deep-rooted hatreds.

In creating the foundation for this great nation, its forefathers agreed,

*“That man is not made for the state, but the state for man. And it derives its just powers from the consent of the governed.”*

I am what I am because of you or ubuntu. That is what the founders meant when they said the state derives its strength from the consent of the governed – whether the governed give that consent consciously or unconsciously. Power, in its entirety, resides in that consent.

For America, therefore, the basis for peace amongst a people different in race, creed or religion is rooted in the consent, or the agreement between the state and the governed. “This government,” they wrote, “the offspring of our choice, uninfluenced and unowed, has a just claim to your confidence and support.” Again, peace rooted in a government whose offspring is our choice, our consent, our agreement. Many a tyranny thrive by hiding the fact that their power resides in the consent of the governed; they thrive by hiding their reliance on this very consent, this very agreement, which can be withdrawn by the governed.

When I dream of the impossible that WorldSpace can achieve, I think among other things, of these basic truths that we can communicate over and over again to free five billion people from the tyranny of ignorance and poverty... *from a distance*. Remember, however you conceive him,

*God is watching us,  
God is watching us from a distance.*

Thank you.